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## Published

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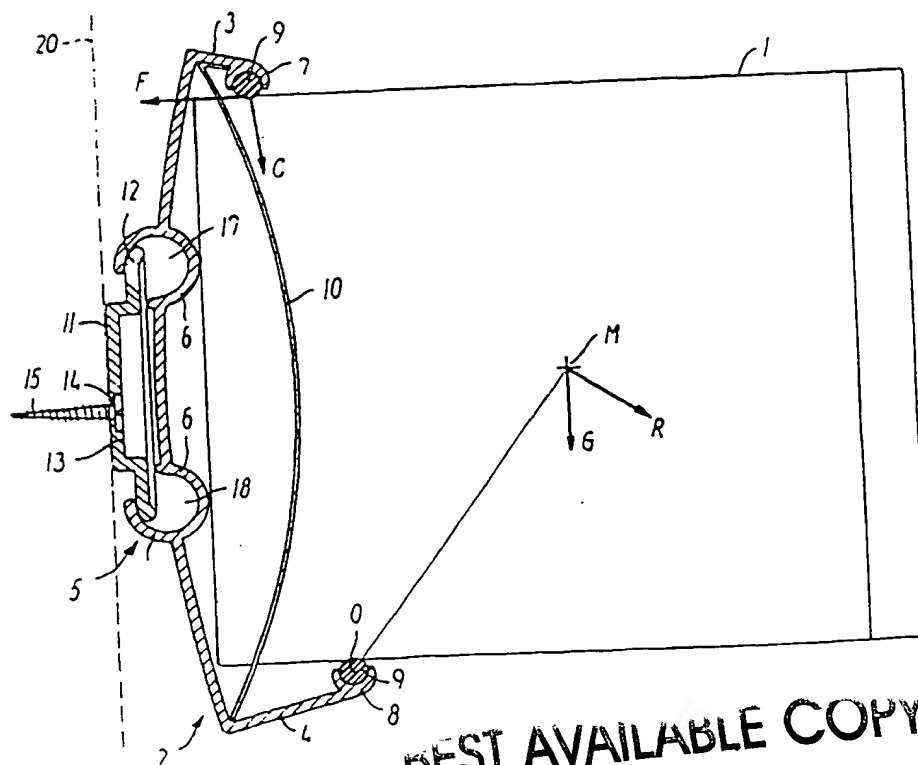
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

In English translation (filed in Danish).

(54) Title: A HOLDER FOR FLAT ARTICLES AND A WALL MOUNTING DEVICE FOR USE IN CONNECTION WITH SUCH A HOLDER

## (57) Abstract

A holder (2) for flat articles (1), such as CD cassettes, CD ROM cassettes, mini-disc cassettes, cassette tapes and other media stored in cassettes comprises upper and lower holding parts (3 and 4, respectively). The holding parts (3, 4) extend at a mutual distance so that a plurality of flat articles (1) may be received standing between these. Further, a rear stop (6) is provided, against which the articles (1) can abut when placed in the holder. The holding parts (3, 4) have holding portions (7, 8) which grip two opposed side faces at the end of the articles (1) facing the rear stop (6). At least one of the holding parts (3, 4) has a longitudinal resilient element (9) as a holding portion (7, 8). The force applied by the resilient element (9) to the standing articles (1) is so great that the articles (1) can be retained without turning over, even though a considerable part of the individual articles (1) extends outside the holder (2).



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A holder for flat articles and a wall mounting device for use in connection with such a holder

The invention concerns a holder for flat articles in the form of CD cassettes, CD ROM cassettes, discs, cassette tapes and other media stored in cassettes, and comprising upper and lower holding parts, said holding parts extending at a mutual distance so that a plurality of flat articles may be received standing therebetween, there being moreover provided a rear stop against which the articles may abut when placed in the holder.

Holders of this type are well-known; the rapidly increasing use of CD players may involve a problem with respect to the filing of the individual CDs contained in plastics cassettes.

EP-A-335572 discloses a filing system of the column type. Here the flat articles rest on shelves, which are provided with elevations forwardly as well as rearwardly so that the articles stand stably. However, unless separate support devices are used, the articles will upset when the shelves are not filled completely.

DE-A-4128644 likewise discloses a tower structure for flat articles. Here the articles lie horizontally, and separate compartments are provided for the individual articles, and accordingly various types of compartments are needed since e.g. CD cassettes may have a varying thickness depending on whether they are single or double CDs.

The same type of structure is disclosed in EP-A-415696, the filing system being wall-mounted here. Separate compartments for the individual flat articles are provided here too.

EP-A-173073 discloses a modular system of shelves in which flat articles of the above-mentioned type may be placed. The articles still stand freely, and it requires a support device to prevent upsetting of the articles when the shelves are not filled completely.

WO 92/10115 discloses a display device for flat articles in which the articles are placed with the front facing forwards. This system will not be useful as a filing system, because it is constructed as a display system requiring much space per individual flat article.

DE-C-4032531 discloses a modular filing box for CD cassettes. It will be seen that the problem of single/double CD cassettes has been solved by placing the single cassettes vertically, while the double cassettes are placed horizontally. If it is desired to inspect the front of the cassettes, the cassettes will have to be taken out of the box.

EP-A-293326 discloses a holder device for CD cassettes and the like where the flat articles are retained in two opposed side faces, one holder grip being releasable so that the plate can be pushed forwards. It is a relatively complex structure which is expensive to manufacture in relation to the number of flat articles which it can contain.

EP-A-368075 discloses a CD cassette holder where space is indicated in separate compartments for the individual cassettes. The articles are retained at one end by applying a clamping force around two opposed sides of the articles, so that the articles can be retained without turning over. The holders of the individual cassettes are pivotally mounted with respect to a frame. This imparts complexity to the structure, which is inexpedient, partly because the structure will be expensive to

manufacture, partly because it will be weak owing to the many moving parts.

- 5 Finnish Published Application 84015 discloses bookshelves where the shelves are arranged at a slightly greater distance than the height of the articles. The underside of each shelf is formed with brushes by means of which the books can be retained in a standing position even if they stand alone.
- 10 None of the above-mentioned examples of prior art provides a holder for flat articles which makes it possible to retain uniform articles which just vary with respect to the thickness of the articles, to inspect the end face of the articles and to flip through the stack of articles, if so desired. Further, the
- 15 holder must be inexpensive to manufacture, be easy to clean and be very sturdy.

This object is achieved by a holder according to the invention which has the constructive features defined in the character-  
20 izing portion of claim 1, it being ensured hereby that the holding parts of the holder apply a force to the individual articles so that these remain standing without turning over. Further, it is possible to flip through the stack of articles. The resilient element usually subject the standing articles to a  
25 frictional force in a direction corresponding to the surface on which the element acts, and to a clamping force directed to the holding portion on the other holding part. The ratio of the two forces depends on how the points of attack of the holding parts are located with respect to each other.

30 As stated in claim 2, both holding parts may advantageously be formed with a longitudinal resilient element. The holder may advantageously be made as an extruded aluminium profile with an

approximately plate-shaped, longitudinal rear member serving as a rear stop, with the holding parts extending outwards from the rear member and having a small width with respect to the height of the rear member. This is stated in claim 3. The holding  
5 parts have grooves facing each other in which a strip of elastic material constitutes the resilient element, and this material may advantageously be a strip of a synthetic silicone material.

10 The invention moreover concerns a wall mounting device of the type defined in claim 6. With such a device it is extremely easy to mount a holder of the type defined in claim 1, it being easy to ensure by means of a screw or the like that the engagement faces of the mounts have exactly the same height, the  
15 first mount being mounted at a desired height, following which the second mount is secured loosely and is turned until the engagement face is level with the engagement face of the first mount. Then the screw of the mount is tightened so that the two engagement faces are exactly flush. Then the holder is mounted.  
20 This principle is extremely useful when the mounts are saucer-shaped, as stated in claim 7, and when the recess of the holder or the furniture has the shape stated in claim 8. Usually, it is not necessary, but may be expedient in certain cases, that the saucer-shaped mount has a further hole, since the suspension strength of the mounts may thus be enhanced, once they are  
25 placed in position.

With a wall mounting device of this type it will be extremely easy to extend items of furniture or CD holders of the mentioned type in a modular manner, since the elements already  
30 mounted may be taken down, and the mounts thus correctly mounted serve as a starting point for the mounting of the mounts necessary for the extension. This provides good preci-

sion in connection with modular extensions of CD holders according to the invention when these are wall-mounted.

The invention will be described more fully below in connection with preferred embodiments and with reference to the drawing, in which:

fig. 1 is a sectional view of a preferred embodiment of a holder according to the invention;

fig. 2 is a perspective view of the holder shown in fig. 1 in a disassembled state;

fig. 3 shows two wall mounts for use with a holder according to the invention; and

fig. 4 shows the wall mounts shown in fig. 3 after adjustment of level.

Fig. 1 shows a holder 2 for flat articles, which may be e.g. be CD cassettes, CD ROM cassettes, minidisc cassettes or other similar articles which are to be stored for an extended period of time in a manner making the articles readily accessible. The holder 2 comprises an upper holding part 3 and a lower holding part 4 which, as will be seen, extend at a mutual distance such that the flat articles may be received standing between these. In addition, a rear plate 5 having a rear stop 6 is provided, said articles 1 abutting against these rear stops 6 when they are placed in the holder 2. The holding parts 3, 4 have holding portions 7, 8 which grip two opposed side faces at the end of the articles 1 facing the rear stop 6. Since the rear plate 5 and the holding parts 3, 4 of the holder are rigid, at least one of the holding portions 7, 8 of the holding parts is formed with a longitudinal, resilient element 9, and in the preferred

embodiment, which is shown in fig. 1, the holding portions 7, 8 of both holding parts 3, 4 are formed with such resilient elements 9. Hereby, a force applied by the resilient element 9 acts on the standing articles 1, said force being so great that the articles can be retained without turning over about the holding portion 8 of the lower holding part as a pivot. In other words, the articles will be retained although a considerable part of these extends outside the actual holder 2.

- 10 It will be seen from fig. 1 that the article 1 has a mass centre M in the centre, and it is indicated that the article 1 is subjected to a force of gravity G which, if the upper holding part 3 were not present, would cause the article 1 to turn over about a pivot O located in the lower holding part 4.
- 15 This movement is indicated by the arrow R. Because of the force of gravity G the resilient element 9 in the upper holding part 3 subjects the article to a frictional force F in the plane of the side of the article concerned, and to a compression force C or clamping force which is directed against the holding portion
- 20 8 on the lower holding part. This means that when an article is placed in the holder 2, it may be caused to engage the rear plate 5 of the holder and then stands by itself. It will be possible to flip through a stack of articles 1 without these being loosened from the holder. The ratio of the frictional
- 25 force F to the compression C depends on the actual points of attack of the holding parts 3, 4 on the articles 1. The best grip of the articles is obtained if the point of attack of the upper holding part is slightly closer to the end facing the rear stop than the point of attack of the lower holding part.
- 30 Thus, it is optimum if the upper point of attack is present in the outermost one-fifth of the upper side of the article, but further inwards than the outermost one-twentieth of the article. The lower point of attack will advantageously be in the outermost one-third of the width of the article.



It will be seen in fig. 1 that the rear plate is formed with two cylinder grooves or gripping edges 17, 18, whose bottoms serve as rear stops 6. The holder 2 may in general be made as an extruded aluminium profile, and the gripping edges 17, 18 can grip wall mounts 11 adapted for the purpose. However, it is no condition that the holder of the invention is used as a wall-mounted CD holder, but this will often be desired since this provides the best possibilities of extending the system in a modular manner.

The wall mounts 11 have upwardly inclined engagement faces 12, which means in this case that the faces diverge, seen from the wall, so that the gripping edges 17, 18 of the holder can grip behind the engagement faces of the mounts and rest on these. The engagement faces 12 of the mounts 11 are rotationally symmetrical, and the mounts are formed with an eye 14 which can accommodate a screw 15 for the attachment of the mount to the wall, which is indicated by the dashed line 20. The eye 14 is usually formed in the central part 13 of the mount and is offset from the rotational centre of the engagement faces. This is readily apparent from figs. 1 and 2.

Figs. 3 and 4 illustrate the advantages of the mounts of the invention, it being seen here that a first mount 11 (to the left) may be mounted and clamped, following which a second mount 11 (to the right) may be mounted without the screw 15 being tightened completely. Before it is tightened, the flushing-up line 16 between the upper engagement faces of the two mounts may be caused to assume a horizontal position by turning the second mount. This step in the mounting may e.g. be performed using a spirit level. When the mounts assume the position shown in fig. 4 with a horizontal flushing-up line 16,

the screw 15 is tightened, and the holder of the invention is pushed inwardly over the mounts with the gripping edges 17, 18 behind the engagement faces 12 of mounts.

- 5 When modular extension of the holder of the invention is needed, an existing module is dismantled, and new mounts 11 are mounted so as to be flush with the existing mounts. It will hereby be possible for the holders to be mounted in continuous extension of each other. Mounting of the holders as a vertical  
10 column will not be a problem either, since the correct distances may be ensured at all times by placing a mount correctly with respect to the existing mounts.

It will be seen in figs. 1 and 2 that a leaf spring portion 10  
15 may advantageously be mounted, said leaf spring portion being received in the grooves formed by the holding parts 3, 4 and solely serving as a sight for the mounting of the flat articles 1. In other words, the leaf spring 10 is useful as a side stop for the flat articles - preferably the CD cassettes - or serves  
20 as a sight in the placing of the CDs.

As mentioned, the invention is not restricted to being wall-mounted, but may be designed as a table model using the same principle of retention. As will be clear to a skilled person,  
25 it is also possible to build a similar structure in wire objects alone, since the holding parts 3, 4 may be formed as wires, optionally coated with a resilient element. With respect to the wall of the rear stop, this does not have to be integral, since a wall-mounted holder can use the wall as a rear  
30 stop, if the holder has no rear covering.

P a t e n t   C l a i m s :  
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1. A holder (2) for flat articles (1), such as CD cassettes,  
5 CD ROM cassettes, minidisc cassettes, cassette tapes and other  
media stored in cassettes, comprising upper and lower holding  
parts (3 and 4, respectively), said holding parts (3, 4) ex-  
tending at a mutual distance so that a plurality of flat  
10 articles (1) may be received standing therebetween, there being  
moreover provided a rear stop (6) against which the articles  
(1) may abut when placed in the holder, c h a r a c t e r -  
i z e d in that the holding parts (3, 4) have holding portions  
(7, 8) which grip two opposed side faces at the end of the ar-  
ticles (1) facing the rear stop (6), that at least one of the  
15 holding parts (3, 4) has a longitudinal resilient element (9)  
as a holding portion (7, 8), and that the force applied by the  
resilient element (9) to the standing articles (1) is so great  
that the articles (1) may be retained without turning over,  
even though a considerable portion of the individual articles  
20 (1) extends outside the holder (2).

2. A holder according to claim 1, c h a r a c t e r i z e d  
in that both holding parts (3, 4) are formed with a longitu-  
dinal resilient element (9).

25

3. A holder according to claim 1 or 2, c h a r a c t e r -  
i z e d in that the holder (2) is made as an extruded alumin-  
ium profile with an approximately plate-shaped longitu-  
dinal rear member (5) serving as a rear stop (6), and that the  
30 holding parts (3, 4) extend outwards from the rear member (5)  
and have a small width with respect to the height of the rear  
member.

4. A holder according to claim 3, c h a r a c t e r i z e d

in that the holding parts (3, 4) have grooves facing each other in which a strip of an elastic material is placed and constitutes the resilient element (9).

5 5. A holder according to claims 1-4, characterized in that the resilient element (9) is a strip of a synthetic silicone material.

10 6. A wall mounting device for use in connection with a wall-mounted piece of furniture (2) or the like, said device having at least two mounts (11) for attachment to a wall, said furniture (2) having a recess (17) to receive the mounts (11), said furniture (2) resting on the upwardly inclined engagement faces (12) of the mount (11), characterized in that the  
15 engagement faces (12) of the mounts (11) are rotationally symmetrical, and that the mounts have an eye (14) for attachment to the wall, said eye being offset from the centre of the rotational symmetry of the engagement faces (12).

20 7. A device according to claim 6, characterized in that the mounts (11) are saucer-shaped.

8. A device according to claim 7, characterized in that the recess is in the shape of a longitudinal channel  
25 (17, 18) whose sides grip behind the saucer-shaped mounts (11)

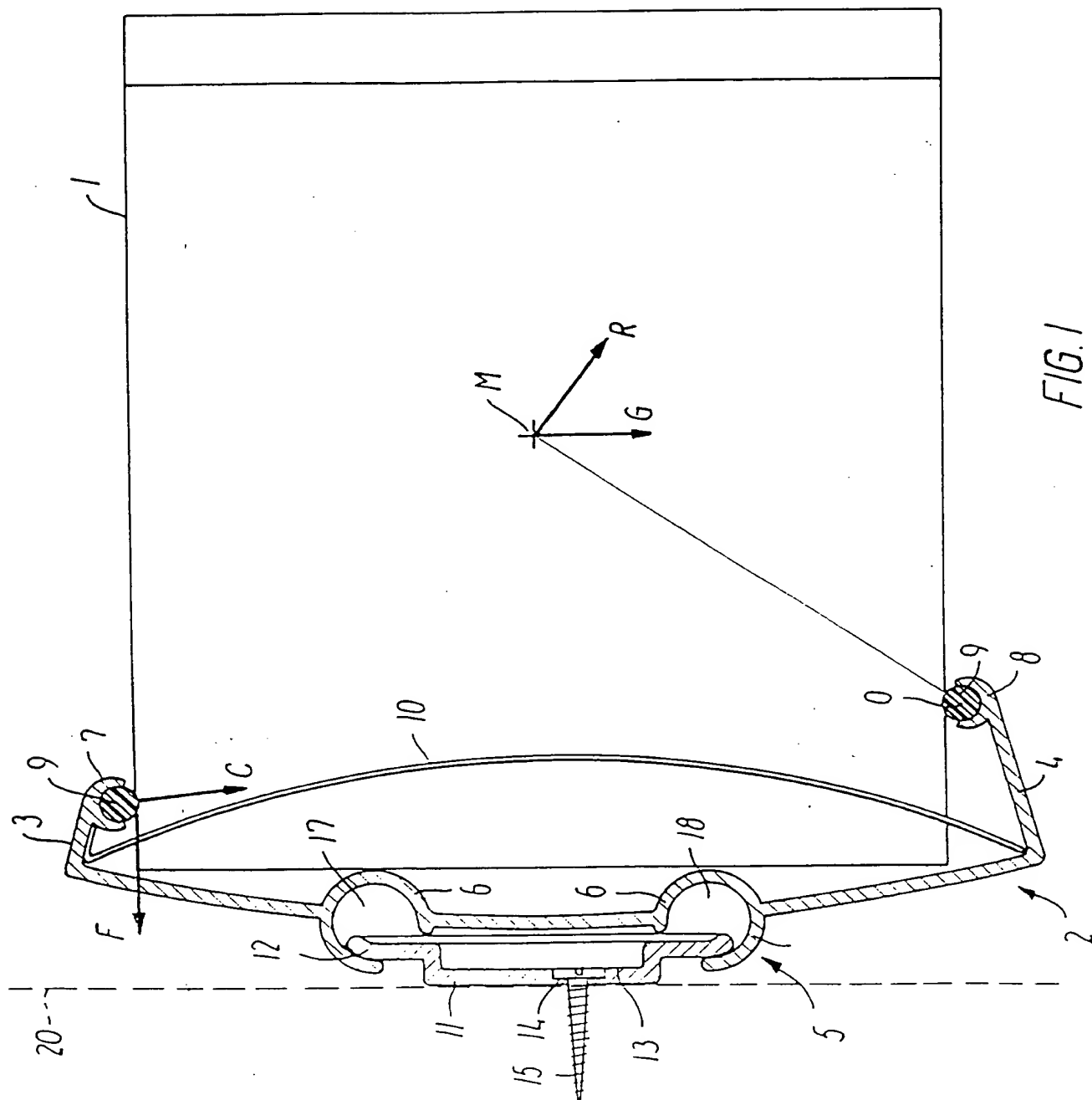


FIG. 1

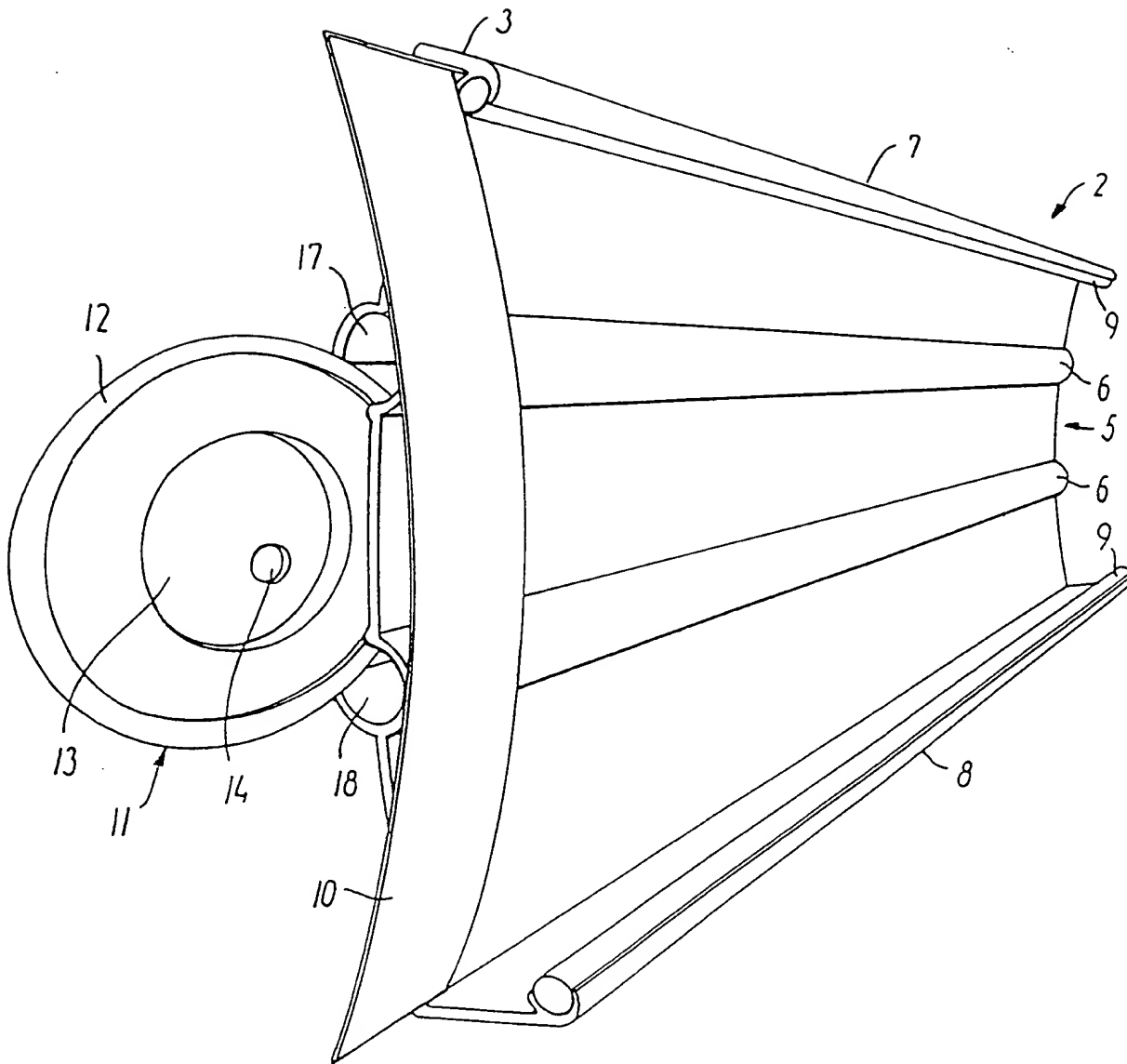


FIG. 2

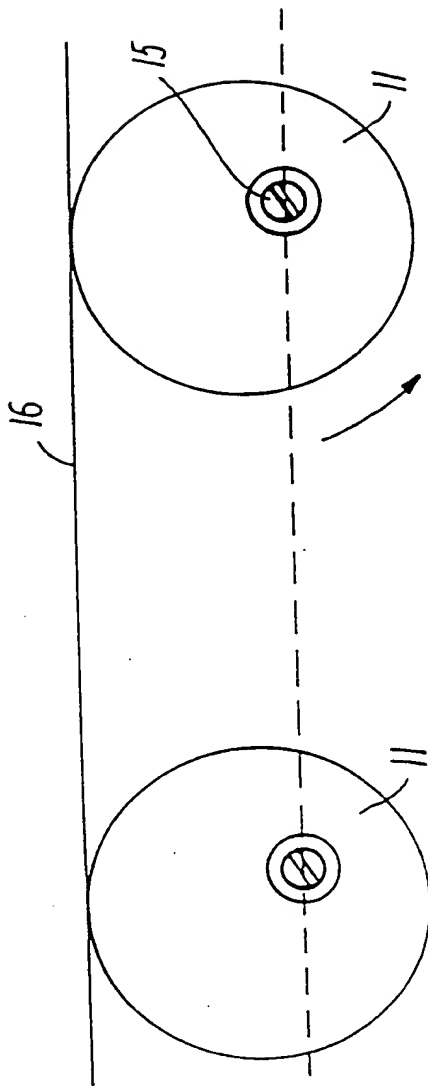


FIG. 3

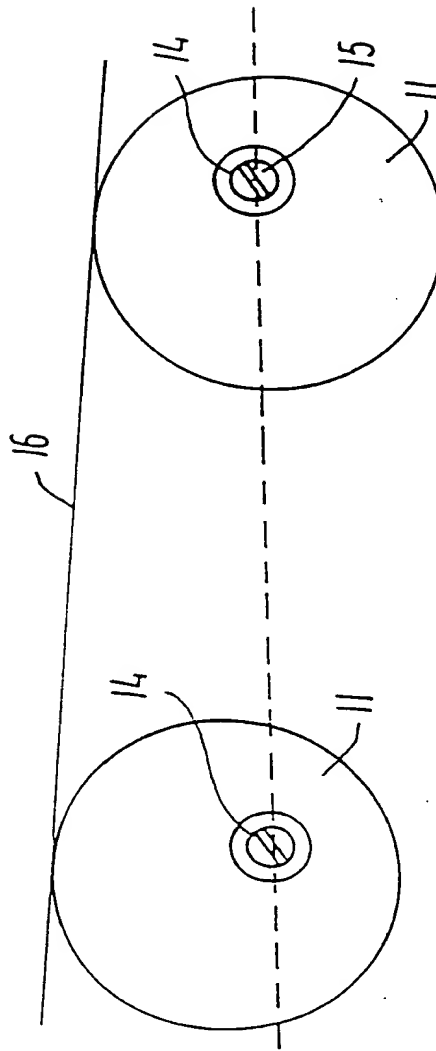


FIG. 4

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC6: G11B 33/04

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A47B, A47F, B65D, G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FI, B, 84015 (STANGEBYE-HANSEN, H.), 28 June 1991 (28.06.91), figures 1-3, details 4-7, claims 1, 2 --	1,2
X	EP, A2, 0368075 (FISCHERWERKE ARTUR FISCHER GMBH & CO. KG), 16 May 1990 (16.05.90), column 3, line 9 - line 16, figure 3, detail 6 --	1,2
X ?	US, A, 4648514 (G.J. NILES), 10 March 1987 (10.03.87), column 5, line 28 - line 43, figures 2, 4 --	1,2
X ?	DE, A, 1429553 (HOFMANN, U.), 21 November 1968 (21.11.68), figure 3, details 5,7, claim 1 --	6

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 95/00029

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3017999 (L.C. CANO), 23 January 1962 (23.01.62), figures 1,2  -----  --	1-8

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

01/04/95

International application No.

PCT/DK 95/00029

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FI-B-	84015	28/06/91	NONE		
EP-A2-	0368075	16/05/90	DE-U-	8813973	06/04/89
			JP-A-	2282088	19/11/90
US-A-	4648514	10/03/87	DE-U-	8615166	17/07/86
			GB-A,B-	2176391	31/12/86
DE-A-	1429553	21/11/68	NONE		
US-A-	3017999	23/01/62	NONE		

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